

Abstract of the Disclosure

A quantizer is used to reduce the amount of data output by video compression systems. In the MPEG standard, the quantizer is generally created with a base quantizer value and a quantizer adjustment. In a base quantizer adjustment stage, the encoder calculates a buffer occupancy accumulator which is defined as difference between the actual number of bits used to encode a frame and the requested bits for the previous video frame of the same video frame type. The system of the present invention limits the changes to the buffer occupancy accumulator with respect to the target number of bits of the current frame. For example, the buffer occupancy accumulator for P-frames is allowed to change a maximum of 40 % and for I-frames (Intra-frames) it is only allowed to change a maximum of 15 %. Limiting the change of the buffer occupancy accumulator will prevent one odd significantly different frame from significantly changing the quantization. Furthermore, an encoder implementing the teachings of the present invention will improved upon the quantizer adjustment by making more accurate estimates of the amount information needed to encode each macroblock. Specifically, the present invention estimates the bits per macroblock in a manner that varies from frame type to frame type. Specifically, for frame types with motion compensation, the present invention exploits the correlation between the complexity of the macroblock and the number of bits needed. In the case of frame types without motion compensation, the present invention imposes a model that biases bit allocation towards smaller activity macro blocks.